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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/889,508	10/18/2001	Masaou Matsuda	358362010400	5230

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EXAMINER	
BOYD, JENNIFER A	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/889,508	MATSUDA ET AL.	
	Examiner	Art Unit	
	Jennifer A. Boyd	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 6-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 6-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 31, 2005 has been entered. The Applicant's Amendments and Accompanying Remarks, filed May 31, 2005, have been entered and have been carefully considered. Claim 12 is added and claims 1 – 4 and 6 – 12 are pending. In view of the submitted 37 CFR 1.132 Declaration which demonstrated that Endo does not anticipate the limitations of Applicant's claim 1, the Examiner withdraws all previously set forth rejections. After another search was conducted, additional prior art has been found which renders the invention as currently claimed unpatentable for reasons herein below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102/103

3. Claims 1, 3 - 4, 6, 8 and 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Leumer (US 5,658,662).

Leumer is directed to a high tenacity, low flammability polyester yarn, production thereof and use thereof (Title).

As to claim 1, Leumer teaches a polyester formed from dicarboxylic acid and diol, which contains, in the polymer chain, units of formula I (column 3, lines 25 – 35). See column 3, lines 29 – 35 for formula I. Leumer teaches that the polyester yarn is spun at a take-up speed above 300 m/min, preferably from 500 – 1500 m/min (column 8, lines 45 – 54). Leumer teaches in the Examples the use of 3% (or 30,000 ppm) of the phosphorus compound (Table 1).

As to claim 4, Leumer teaches a breaking extension within the range of 5 – 30% (column 5, lines 20 – 25).

As to claim 8, Leumer teaches that the yarns can be used in woven fabrics (column 10, lines 20 – 25).

As to claim 12, Leumer teaches that the polyester is melt spun and heat set at a temperature ranging from 225 – 240 degrees Celsius (column 8, lines 50 – 65 and column 9, lines 1 – 5). The total draw ratio is from 1:4.5 to 1:6 (column 8, lines 60 – 65). It should be noted that the process limitations of claim 12 are given minimal patentable weight because the method of forming a polyester fiber is germane to the issue of patentability of the polyester fiber itself. The burden has been shifted to the Applicant to show unobvious differences between the claimed product and the prior art product.

As to claims 1, 3 and 6, although Leumer does not explicitly teach the claimed properties detailed by the following formulas: $\tan \delta_{max} \geq 0.1740$, $T\alpha - 3.77 \times \ln(dtpf) \leq 137.0$ and $1.331 \leq SG - \sqrt{\Delta n}/8.64 \leq 1.345$ as required by claim 1, a property of having not less than 6500 times up to an occurrence of cutting by abrasion under a load of 0.098 N/tex in a yarn abrasion test as required by claim 3, a shrinkage in hot water (SHW) of not more than 10% as required by claim

1, the polyester meets the requirements of formulas 4 – 5 as required by claim 6, it is reasonable to presume that the properties detailed by the following formulas: tan $\delta_{max} \geq 0.1740$, $T\alpha - 3.77 \times \ln(dtpf) \leq 137.0$ and $1.331 \leq SG - \sqrt{\Delta n}/8.64 \leq 1.345$ as required by claim 1, a property of having not less than 6500 times up to an occurrence of cutting by abrasion under a load of 0.098 N/tex in a yarn abrasion test as required by claim 3, a shrinkage in hot water (SHW) of not more than 10% as required by claim 1, the polyester meets the requirements of formulas 4 – 5 as required by claim 6 is inherent to Leumer. Support for said presumption is found in the use of like materials (i.e. a polyester fiber containing 30,000 ppm of phosphorus) which would result in the claimed properties. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties detailed by the following formulas: tan $\delta_{max} \geq 0.1740$, $T\alpha - 3.77 \times \ln(dtpf) \leq 137.0$ and $1.331 \leq SG - \sqrt{\Delta n}/8.64 \leq 1.345$ as required by claim 1, a property of having not less than 6500 times up to an occurrence of cutting by abrasion under a load of 0.098 N/tex in a yarn abrasion test as required by claim 3, a tensile elongation to break (DE) of 20 – 50% as required by claim 4, a shrinkage in hot water (SHW) of not more than 10% as required by claim 1, the polyester meets the requirements of formulas 4 – 5 as required by claim 6 would obviously have been present once the Leumer product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977). It should be noted that at this time the Examiner cannot search fiber fineness and density requirements because the values of those parameters are represent format in which they are dependent on inherent values.

Claim Rejections - 35 USC § 103

4. Claims 1, 2 – 3, 6, 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tashiro et al. (US 4,721,746).

Tashiro is directed to flameproof synthetic fiber (Title).

As to claim 1, Tashiro teaches a copolymerizing a phosphorus compound with a synthetic polymer before melt spinning and then adding HCA (halogenated cycloalkane) to the melt-spun synthetic fiber as the aqueous solution (column 7, lines 39 – 45). Tashiro teaches that the synthetic fiber can be polyester (column 3, lines 15 – 25). Tashiro teaches that the phosphorus is present in the amount of 0.5 – 7.0% (5,000 – 70,000 ppm) by weight (column 6, lines 30 – 50).

As to claim 2, Tashiro teaches a phosphorus compound as shown by Formula IV (column 3, lines 1 – 10 and column 5, lines 45 – 55).

As to claim 8, Tashiro teaches in Examples 29 and 33 that the polyester yarn of the invention can be woven (columns 15 and 18).

As to claim 11, Tashiro teaches that the synthetic fiber is particularly useful for nonwoven fabrics (column 20, lines 10 – 14).

As to claim 1, Tashiro fails to teach that the flame-retardant polyester fiber can be product by melt-spinning at a take-up speed of 1,000 m/min – 4,500 m/min. It should be noted that take-up speed is a result effective variable. For example, as the take-up speed increases, the fiber production increases and resultant fiber diameter can be decreased. It should be noted that one major factor in the upper limit of take-up speed depends on the speed at which fiber breakages occurs. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the flame retardant polyester fiber at a take-up speed of 1,000 –

4,500 m/min, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to update the spinning speed of Tashiro to reflect current technology of higher spinning speed capacities in order to improve production.

As to claims 1, 3 and 6, although Tashiro does not explicitly teach the claimed properties detailed by the following formulas: $\tan \delta_{max} \geq 0.1740$, $T\alpha - 3.77 \times \ln(dtpf) \leq 137.0$ and $1.331 \leq SG - \sqrt{\Delta n}/8.64 \leq 1.345$ as required by claim 1, a property of having not less than 6500 times up to an occurrence of cutting by abrasion under a load of 0.098 N/tex in a yarn abrasion test as required by claim 3, a shrinkage in hot water (SHW) of not more than 10% as required by claim 1, the polyester meets the requirements of formulas 4 – 5 as required by claim 6, it is reasonable to presume that the properties detailed by the following formulas: $\tan \delta_{max} \geq 0.1740$, $T\alpha - 3.77 \times \ln(dtpf) \leq 137.0$ and $1.331 \leq SG - \sqrt{\Delta n}/8.64 \leq 1.345$ as required by claim 1, a property of having not less than 6500 times up to an occurrence of cutting by abrasion under a load of 0.098 N/tex in a yarn abrasion test as required by claim 3, a shrinkage in hot water (SHW) of not more than 10% as required by claim 1, the polyester meets the requirements of formulas 4 – 5 as required by claim 6 is inherent to Tashiro. Support for said presumption is found in the use of like materials (i.e. a polyester fiber containing 30,000 ppm of phosphorus) which would result in the claimed properties. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed properties detailed by the following formulas: tan $\delta_{max} \geq 0.1740$, $T\alpha - 3.77 \times \ln(dtpf) \leq 137.0$ and $1.331 \leq SG - \sqrt{\Delta n}/8.64 \leq 1.345$ as required by

claim 1, a property of having not less than 6500 times up to an occurrence of cutting by abrasion under a load of 0.098 N/tex in a yarn abrasion test as required by claim 3, a tensile elongation to break (DE) of 20 – 50% as required by claim 4, a shrinkage in hot water (SHW) of not more than 10% as required by claim 1, the polyester meets the requirements of formulas 4 – 5 as required by claim 6 would obviously have been present once the Tashiro product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977). It should be noted that at this time the Examiner cannot search fiber fineness and density requirements because the values of those parameters are represent format in which they are dependent on inherent values.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leumer (US 5,658,662) in view of Buxbaum (US 4,101,526).

Leumer teaches the claimed invention above but fails to teach the use of an organic fluorescent brightener in a proportion of 0.01 – 1 wt % and, as a condensation polymerization catalyst, the combination of antimony compound, a germanium compound and a cobalt compound in the amounts that simultaneously satisfy formulas 6- 9 in claim 7.

Buxbaum is directed to a process for manufacturing a linear polyester containing phosphates suitable for use in the form of a filament (Abstract and column 7, lines 50 – 60). Buxbaum teaches that metal compound mixtures comprising cobalt, germanium and antimony can be employed in the polyester in the amount of 0.001 to 1% by weight (column 6, lines 14 – 20). Buxbaum teaches that other additives can be included such as fluorescent whitening agents (column 7, lines 5 – 15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an organic fluorescent brightener as suggested by Buxbaum in the polyester of Leumer motivated by the desire to create a properly whitened polyester to achieve maximal dyeing color uptake and color integrity.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a catalyst comprising antimony, germanium and cobalt as suggested by Buxbaum in the polyester of Leumer motivated by the desire to create a high polymerization rate.

Leumer in view of Buxbaum discloses the claimed invention except for the level of fluorescent brightener present in the polymer is 0.01 – 1% by weight and that the amount of antimony, germanium and cobalt compounds satisfy the following equations: $30 \leq S \leq 400$, $10 \leq G \leq 100$, $5 \leq C \leq 40$ and $200 \leq S + 2G + C \leq 400$. It should be noted that the amount of fluorescent brightener, antimony, germanium and cobalt compounds are result effective variables. For example, as the amount of brightener increases, the polymer becomes whiter and brighter. When the amount of the antimony compound added is less than the aforementioned range, the condensation polymerization becomes slow, and when it exceeds the above-mentioned range, the L value as measured with a Hunter's color-difference meter unpreferably decreases. When the amount added of the germanium compound is less than the above-mentioned range, the condensation polymerization becomes slow, and when it exceeds the above-mentioned range, the production cost becomes higher because germanium is extremely expensive, and the b value of the polymer unpreferably increases. When the amount added of the cobalt compound is less than the above-mentioned range, the b value of the color tone of the resulting polymer becomes

high. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add the fluorescent brightener in the amount of 0.01 – 1% by weight since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the amount of optical brightener to create a suitably white polyester and to optimize the levels of antimony, germanium and cobalt to create a cost efficient, properly tinted polyester which is polymerized in an efficient manner.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tashiro et al. (US 4,721,746) in view of Buxbaum (US 4,101,526).

Tashiro teaches the claimed invention above but fails to teach the use of an organic fluorescent brightener in a proportion of 0.01 – 1 wt % and, as a condensation polymerization catalyst, the combination of antimony compound, a germanium compound and a cobalt compound in the amounts that simultaneously satisfy formulas 6- 9 in claim 7.

Buxbaum is directed to a process for manufacturing a linear polyester containing phosphates suitable for use in the form of a filament (Abstract and column 7, lines 50 – 60). Buxbaum teaches that metal compound mixtures comprising cobalt, germanium and antimony can be employed in the polyester in the amount of 0.001 to 1% by weight (column 6, lines 14 – 20). Buxbaum teaches that other additives can be included such as fluorescent whitening agents (column 7, lines 5 – 15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include an organic fluorescent brightener as suggested by Buxbaum in the polyester

of Tashiro motivated by the desire to create a properly whitened polyester to achieve maximal dyeing color uptake and color integrity.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a catalyst comprising antimony, germanium and cobalt as suggested by Buxbaum in the polyester of Leumer motivated by the desire to create a high polymerization rate.

Tashiro in view of Buxbaum discloses the claimed invention except for the level of fluorescent brightener present in the polymer is 0.01 – 1% by weight and that the amount of antimony, germanium and cobalt compounds satisfy the following equations: $30 \leq S \leq 400$, $10 \leq G \leq 100$, $5 \leq C \leq 40$ and $200 \leq S + 2G + C \leq 400$. It should be noted that the amount of fluorescent brightener, antimony, germanium and cobalt compounds are result effective variables. For example, as the amount of brightener increases, the polymer becomes whiter and brighter. When the amount of the antimony compound added is less than the aforementioned range, the condensation polymerization becomes slow, and when it exceeds the above-mentioned range, the L value as measured with a Hunter's color-difference meter unpreferably decreases. When the amount added of the germanium compound is less than the above-mentioned range, the condensation polymerization becomes slow, and when it exceeds the above-mentioned range, the production cost becomes higher because germanium is extremely expensive, and the b value of the polymer unpreferably increases. When the amount added of the cobalt compound is less than the above-mentioned range, the b value of the color tone of the resulting polymer becomes high. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add the fluorescent brightener in the amount of 0.01 – 1% by weight since it has

been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the amount of optical brightener to create a suitably white polyester and to optimize the levels of antimony, germanium and cobalt to create a cost efficient, properly tinted polyester which is polymerized in an efficient manner.

7. Claims 9 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tashiro et al. (US 4,721,746) in view of Vogt (US 5,952,413).

Tashiro teaches that the synthetic fiber of the present invention is useful for textile, filling, interior, nonwoven fabric, artificial leather and artificial fur uses (column 20, lines 10 – 14). Tashiro teaches in Examples 29 and 33 that the fiber can be woven (columns 15 and 18).

Tashiro fails to teach that the woven or knitted fabric has undergone a raising treatment to create a sueded fabric as required by claims 9 and 10.

Vogt teaches a method of making a polyurethane suede-like material (Title). Vogt teaches that the textile fabric can comprise any synthetic fiber such as polyester (column 4, lines 45 – 48). Additionally, the fabric may be in any form such as woven, non-woven or knitted (column 4, lines 53 – 55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a raising treatment to create a sueded fabric as suggested by Vogt in the application of Tashiro motivated by the desire to have an aesthetically pleasing and soft material.

Although Tashiro in view of Vogt does not explicitly teach the claimed coefficient of friction of a surface of 0.200 – 0.300 as required by claim 9 and after-flame time of not more than 3 seconds as measured by the Applicant's test as required by claim 10, it is reasonable to presume that the claimed coefficient of friction of a surface of 0.200 – 0.300 as required by claim 9 and after-flame time of not more than 3 seconds as measured by the Applicant's test as required by claim 10 is inherent to Tashiro in view of Vogt Support for said presumption is found in the use of like materials (i.e. phosphorus-containing polyester woven fabric with a sueded surface) which would result in the claimed properties. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of the claimed coefficient of friction of a surface of 0.200 – 0.300 as required by claim 9 and after-flame time of not more than 3 seconds as measured by the Applicant's test as required by claim 10 would obviously have been present once the Tashiro in view of Vogt product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

8. Claims 9 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leumer (US 5,658,662) in view of Vogt (US 5,952,413).

Leumer teaches the claimed invention above but fails tot teach a woven or knitted fabric which has undergone a raising treatment to create a sueded fabric as required by claims 9 and 10.

Vogt teaches a method of making a polyurethane suede-like material (Title). Vogt teaches that the textile fabric can comprise any synthetic fiber such as polyester (column 4, lines 45 – 48). Additionally, the fabric may be in any form such as woven, non-woven or knitted (column 4, lines 53 – 55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a raising treatment to create a sueded fabric as suggested by Vogt in the application of Leumer motivated by the desire to have an aesthetically pleasing and soft material.

Although Leumer in view of Vogt does not explicitly teach the claimed coefficient of friction of a surface of 0.200 – 0.300 as required by claim 9 and after-flame time of not more than 3 seconds as measured by the Applicant's test as required by claim 10, it is reasonable to presume that the claimed coefficient of friction of a surface of 0.200 – 0.300 as required by claim 9 and after-flame time of not more than 3 seconds as measured by the Applicant's test as required by claim 10 is inherent to Leumer in view of Vogt Support for said presumption is found in the use of like materials (i.e. phosphorus-containing polyester woven fabric with a sueded surface) which would result in the claimed properties. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of the claimed coefficient of friction of a surface of 0.200 – 0.300 as required by claim 9 and after-flame time of not more than 3 seconds as measured by the Applicant's test as required by claim 10 would obviously have been present once the Leumer in view of Vogt product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

Response to Arguments

9. Applicant's arguments with respect to claims 1 – 4 and 6 - 12 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Boyd whose telephone number is 571-272-1473. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer Boyd
August 3, 2005

Ula C. Ruddock
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